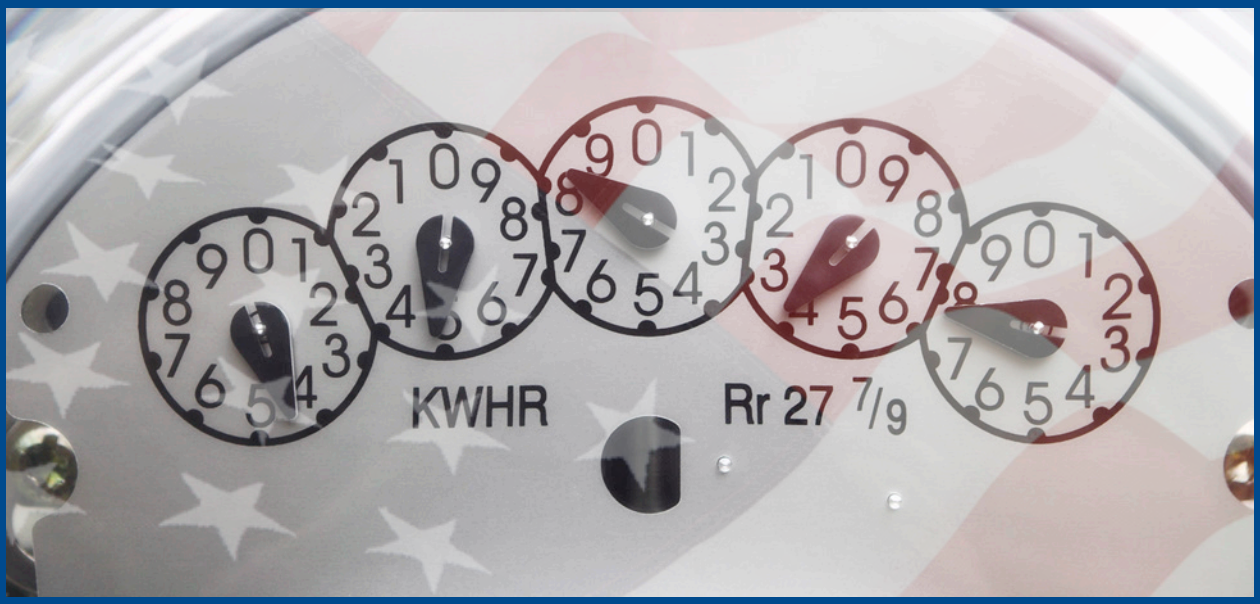
TEXAS PUBLIC POLICY FOUNDATION

EPA as **Overlord** of U.S. Electric Power



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Texas Public Policy FOUNDATION

Celebrating 25 Years

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Overview

"[EPA's Clean Power Plan] has the potential to comprehensively reorder the jurisdictional relationship between the federal government and states as it relates to the regulation of public utilities and energy development. … [States] will have entered a comprehensive 'mother-may-I?' relationship with EPA that has never before existed." Commissioner Tony Clark, Federal Energy Regulatory Commission.[1]

On June 2, 2014 the U.S. Environmental Protection Agency (EPA) proposed re-engineering our nation's system of electric generation through its proposed rule: "Carbon Pollution Guidelines for Electric Generating Units."[2] The rule would impose a mandatory national goal to reduce CO_2 from existing electric generation 30 percent from 2005 levels by 2030. Now commonly called EPA's "Clean Power Plan" (CPP), the rule would usurp long-upheld state authority over electric utilities to impose federally centralized low-carbon operation of the nation's electric power system. In this action, EPA has vastly expanded its authority to reduce polluting emissions at individual industrial facilities on a scale that would be unrecognizable by the Congress that enacted the Clean Air Act.

The magnitude of what EPA now champions as a flexible, common sense program to reduce CO_2 from the electric power sector has escaped most commentators and many policy makers.

The U.S. Congress has repeatedly considered, but always rejected, new law to control greenhouse gases (ghg). Undeterred, EPA has handily arrogated this authority under the existing Clean Air Act (CAA). Since EPA's Endangerment Finding in 2009 that ghg are harmful pollutants within the legal scope of the CAA, EPA has promulgated at least six rules for ghg that constitute the largest expansion of regulatory authority in the history of the CAA.[3]

By redefinition of a single word, EPA obliterates a fundamental statutory limit to its regulatory reach. The law authorizes EPA to establish emission standards that apply to the individual physical power plants which generate the emissions. And the maximal standard EPA can impose is limited by the following rubric in law: "the degree of emission limitation achievable through the application of the *best system of emission reduction* which (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated."[4]

Key Points

- EPA's recently proposed Clean Power Plan would require a 30 percent reduction in greenhouse gas emissions from the electrical sector by 2030.
- EPA's proposed rule goes far beyond its legal authority, coercing states into dictating fuel mix according to federal criteria.
- Texas would be burdened far more than any other state and compliance with the Clean Power Plan mandates would require extensive changes in Texas law, including a re-regulation of Texas' competitive electrical market.
- U.S. Congress needs to set clear limits to EPA's authority in new law.

Overview of EPA's Clean Power Plan

- Beyond Best System of Emission Reduction to EPA Preferred Best System of Electric Generation
- Standards of Performance for Existing Electric Generating Units- CAA Section 111(d)
- EPA assigns state-specific standards: Annual average CO_2 per Megawatt hour of electric generation
- State Implementation Plans Based on EPA Stipulated Building Blocks
- Building Blocks = EPA Determination of Best System of Emission Reduction (BSER)
  BSER Building Block 1 – 6 % efficiency improvement at coal-fired power plants (inside the fence)
  BSER Building Block 2 – Switch from coal to natural gas – 70% of generation
  BSER Building Block 3 – New Renewable - 13% of generation/TX- 20%
  BSER Building Block 4 – Demand-side Energy Efficiency- 9.9% cumulative average "savings" 2030

Note: Blocks 2, 3, and 4 are "outside the fence" of the power plant.

EPA's new CO_2 rule, however, reinterprets the word "system" to mean not pollution control technologies like scrubbers, but the nation's system of generating and dispatching electricity. Thus with a slight turn of phrase, EPA has laid claim to determining what is the 'best system of electric generation' for the country. For EPA, the best system of generation is low to zero carbon.

So understood, EPA seizes a sweeping economic power to control the means of production of electricity: fuel, generating system, dispatch, transmission and consumption. EPA's master plan envisions little to no coal, a 70 percent utilization rate for existing natural gas plants, 13 percent generation from renewables or nuclear and more than 10 percent less demand for electricity.[5] Unlike cap and trade schemes or a carbon tax, EPA's CPP carries the coercive force of the CAA in measures that are enforceable, verifiable, and quantifiable. This single rule impacts every business and home. What economic sector could be more important to all other sectors than electric power?

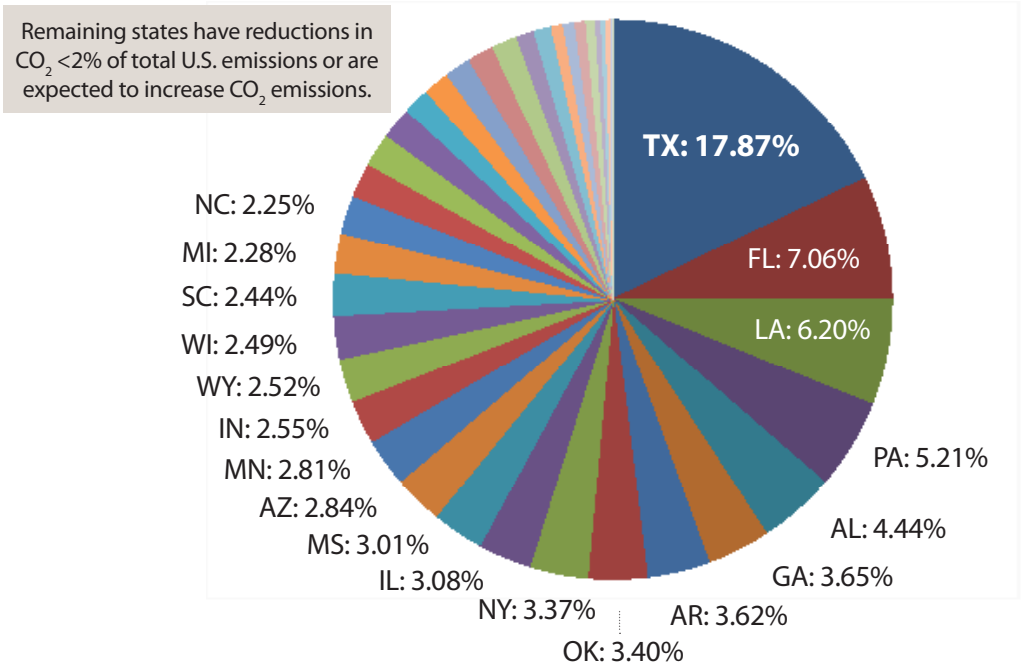
Introduction

In a landmark ruling on EPA's authority under the CAA, the Supreme Court reminded EPA that "Congress ... does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions—it does not, one might say, hide elephants in mouse holes."[6] In the proposed CPP, EPA has seized the largest elephant to date from a small, obscure portion of the law.[7] EPA's CPP rule would commandeer state governments by means of federally enforceable implementation plans closely resembling the Integrated Resource Plans (IRPs) widely used by state utility commissions to assure sufficient generation to meet demand for electricity.[8] "With the possible exception of California, no states have expressly delegated regulatory authority to implement and oversee carbon-based resource planning, including enforcement and corrective action authority."[9]

EPA's rule contemplates replacing such "security constrained economic dispatch" with low carbon dispatch. As such, EPA's Clean Power Plan goes to the nerve center of electric power: dispatch of electric power to the grid. State plans, as now envisioned by EPA, would make lowering CO_2 emissions the priority of dispatch in place of price and reliability, heretofore the driving variables for dispatching electricity on the hundreds of thousands of transmission lines across the nation.

EPA's proposed rule assigns to each state a mandatory standard expressed as average rate of carbon intensity per unit of electricity generated. To soften the regulatory edges of what is, indeed, an enforceable dictate, EPA now calls each state's federal standard a "performance goal." These standards must be enforceable, quantifiable and verifiable under the CAA. Aspirational goals, the CO_2 "performance goals" are not.

Figure 1: States' CO_2 Reductions from Electric Generation by 2030 (budgeted rate)



Source: EPA's eGrid 2012 Data & Bloomberg, New Energy Finance analysis (for the rate-to-mass conversion on which percentages are based).

Individual state standards vary widely but EPA imposes a far heavier regulatory burden on Texas than any other state. The standard mandates that Texas achieves 18 percent of the nation-wide CO_2 reduction.[10] **See Figure 1**. EPA's model, through which the rule was designed, finds that Texas would need to eliminate over 50 percent of current coal-fired generation,[11] expand utilization of natural gas combined cycle generation to 70 percent of total capacity,[12] increase renewable generation by over 150 percent,[13] and cumulatively reduce the projected consumption of electricity by 9.9 percent, all by 2030.[14]

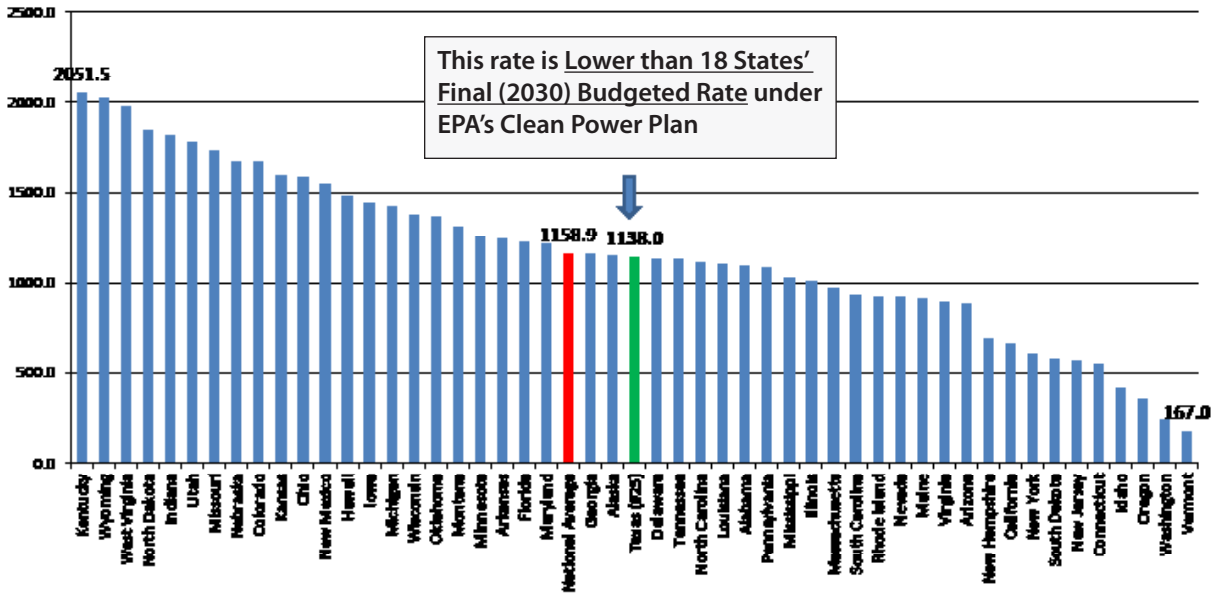
EPA's transformation of electric generation in the U.S. would be imposed on a tight timeline. Comments are due to EPA by December 1, 2014. Adoption of the rule is planned for June 2015. State submissions of implementation plans are due in 2016. The rule would become effective in 2017. Most of the massive re-engineering would need to be well under way or in place by 2020 to meet the final effective date in 2030.

Texas' Disproportionate Burden

Texas would be far more disproportionately impacted by the CPP than any other state. **See Figure 1**. Yet, EPA did not even hold one of its four field hearings on the proposed rule in Texas. The obligation imposed on Texas is almost two times the next two states combined (Florida and Louisiana). Texas generates approximately 11 percent of the country's electricity but is obligated to achieve over 18 percent of EPA's national goal to reduce CO_2 from the nation's electrical sector by 30 percent.

If considered on the basis of the volume of electricity generated, EPA imposes on Texas two-times its proportionate share of required emissions reduction. Texas is not—as has been frequently labeled —"the nation's worst CO_2 polluter." While the volume of CO_2 emitted from Texas power plants is higher than other states, Texas plants have a combined lower emission rate of CO_2 than 32 other states. **See Figure 2 (next page)**.

Figure 2: Individual State CO_2 Emission Rate



Source: EPA Data File - 2012 Unit-Level Data Using the eGRID Methodology.

Texas' current average CO_2 emission rate is 1,284 lbs. CO_2/MWh-yr. As proposed in the rule, EPA's enforceable performance goal for TX is 791 lbs. CO_2/MWh-yr. This translates to reducing the carbon intensity of Texas' electric generation by 39 percent. **See Table 1**.

Note that this mandatory standard is significantly lower than the carbon intensity of generation from combined cycle natural gas plants—promoted by EPA as the most viable alternative to coal-fired generation. Thus, if Texas relied on combined cycle natural gas plants to meet 100 percent of demand, Texas still would exceed EPA's standard. EPA's CPP assumes a massive deployment of new renewables in addition to massive shift from coal to natural gas combined cycle. **See Table 2**.

Table 2: Carbon Intensity Rates

EPA Mandate for TX	791 lb. CO_2/MWh
Current TX	1,284 lb. CO_2/MWh
Combined Cycle Natural Gas	1,000 lb. CO_2/MWh
New Coal EPA Mandate	1,100 lb. CO_2/MWh
New Advanced Coal	1,800 lb. CO_2/MWh

According to EPA's modeling, the compulsory goal for Texas translates to a 42 percent overall reduction of CO_2 emissions and an elimination of over 50 percent of coal-fired generation.[15] Forced fuel switching from coal to natural gas of this magnitude would involve closure of at least 19 of the coal-fired electric generating units in this state by EPA's calcula-

Table 1: EPA's Performance Standard: Average Amount of CO_2 Emission per MWh of Electricity/year

EPA Mandate for Texas	18% of National Goal
TX Current Rate in CO_2 lbs./MWh	1,284 lbs./MWh
TX EPA Performance Standard	791 lbs./MWh
TX Interim Standard (2020)	853 CO_2 lbs./MWh
EPA Model	Texas 39% Reduction of CO_2 from Electric Power Sector

tions.[16] **See Appendix 1.** Such closures amount to loss of 16,565 MW of generating capacity—15 percent of the state's 110,000 MW of capacity.[17] Risk of forced closure as a result of the CPP rule may lead companies to shutter additional coal plants now, rather than make the billion-dollar expenditures needed to comply with EPA's many new rules for conventional pollutants, such as mercury and ozone, effective within the next few years.[18]

Electric generators already anticipate the loss of 15 gigawatts (GW) of electric power in the next few years as a result of inability to comply with EPA's rule to control mercury adopted in 2012. By EPA's own estimate, the mercury rule has an annual compliance cost of $9.6 billion.[19] Industry estimates of compliance costs are much higher.[20] The proposed CPP and expected new Ozone standard will substantially exceed the costs of the mercury rule.

Nationally, EPA assumes that a total 119 GW of coal-fired generation will shut down from 2010-2020 as a result of EPA rules.[21] According to the Energy Information Administration, the total U.S. Electric Generating Capacity is 1032 GW as of 2012.[22] It is difficult to imagine that the loss of as much as 119 GW of base load power would not risk reliability and grid safety in large swaths of the country heavily dependent on coal.

The cumulative cost of complying with the unprecedented number of new regulations for conventional pollutants promulgated over the last five years, as well as the proposed CO_2 rule, are likely prohibitive for many plants. Why would a generator invest hundreds of millions to comply with existing regulations only to operate for a few years before EPA's additional carbon dictates would force closure?

EPA's proposed rule actually understates the reduction of coal necessary to meet the performance goal assigned to Texas. EPA uses 2012 as the baseline year for its emissions reduction targets in the CPP. Yet, Texas relied on significantly less coal generation in 2012 because of unusually low natural gas prices that year. In 2013 and 2014, coal returned to fuel 36-40 percent of generation. As was the case across the country, the exceptionally cold winter of 2014 required the dispatch of coal units, already shuttered or announced for retirement, just to meet the higher base load demand. And the heightened winter demand led to record spot prices for natural gas in New England as high as $80 per mmBtu and as a January-February average spot price of over $20 mmBtu.[26] Long-range weather forecasts predict an even colder winter for 2015.

The stringency of EPA's performance standard for Texas—unachievable even if natural gas provided 100 percent of generation—would necessitate massive deployment of additional renewable capacity. A surprise for many Texans, the state's 12,000 MW of installed wind generating capacity—more than any other state and most countries—give Texas no head start to meet EPA's low carbon performance goal. EPA's goal to reduce CO_2 emissions by 30 percent in comparison to 2005 levels actually calculates emissions

EPA's Mercury Rule[23]

EPA estimates the cost of compliance with the mercury rule at $9.6 billion.[24] EPA acknowledges that the rule carries the highest cost of any previous EPA regulation but also admits that the benefits from direct reduction of mercury account for only 0.004 percent of the rule's alleged benefits. The remaining 99.996 percent of the benefits EPA derives from to coincidental reduction of fine particulate matter as a result of less coal generation. But EPA already has a highly protective national ambient standard for particulates that most areas of the country already attain.

Most U.S. power plants already have reduced airborne emissions of mercury by 60-70 percent. The new rule requires a 90 percent reduction of the remainder within a short time frame.[25] EPA's sets the mercury standard at a level 2-3 times higher than the World Health Organization, Agency for Toxic Substances and Disease and the Food and Drug Administration. The Center for Disease Control's survey of blood mercury levels shows that average levels are now well below even EPA's unreasonably protective standard.

based on data in 2012 for purpose of setting the state-specific performance goals. The 12,000 MW of wind generating resources were installed in Texas before 2012.

Indeed, analysts conclude that the new rule assumes Texas would have to increase renewable generation by over 150 percent—far more than any other state and twice as much as the second highest state (Pennsylvania). This is an increase from a current wind capacity of 38 million MWh-year to 86 million MWh-yr. **See Figure 3**.

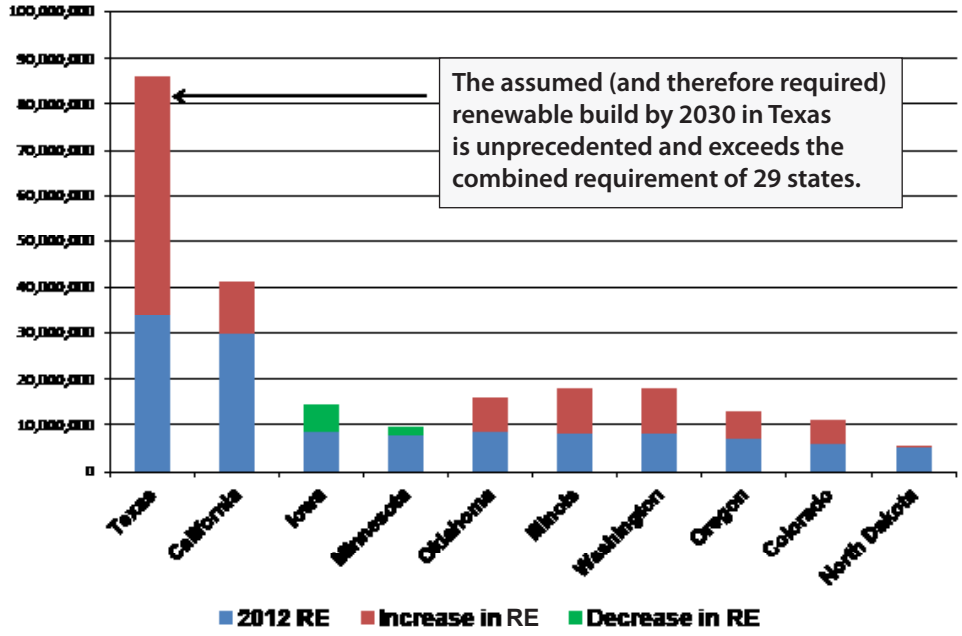
Adding this much new renewable generating capacity would far outstrip the capacity of the recently completed transmission lines of 3,600 miles—a project known as the Texas Competitive Renewable Energy Zone (CREZ).The $7 billion dollar cost of the CREZ lines will be paid by rate payers.[27] How Texas could take on another extravagant transmission project to serve additional renewable facilities of the magnitude required by EPA's power plan is a threshold question for the state.

EPA's justification for such a massive deployment of additional renewable resources is unclear. Apparently, the Agency believes the wide open spaces and many sunny days in Texas are reasons enough to require Texas to increase renewable capacity by more than 150 percent regardless of cost, reliability risks, transmission constraints, or the current challenges for stabilizing the grid as increasing renewable generation seeks dispatch.[28]

Grave problems have followed Germany's aggressive deployment of renewable generating resources as well as soaring electric prices now three times higher than average U.S. prices.[29] Germany's subsidy for renewables amounted to over $31 billion in 2014 alone, and may reach over 800 billion by 2022. German ministries announce that Germany lost $67 billion in industrial exports from 2008-2013. Ironically, Germany now uses more coal generation than before its renewable programs were in place because coal must be ready as a back-up to inherently intermittent renewable and because renewables cannot readily scale to provide base-load power. Low-carbon policies tend to be counterproductive because they are typically infeasible even with the outer reaches of existing technology.

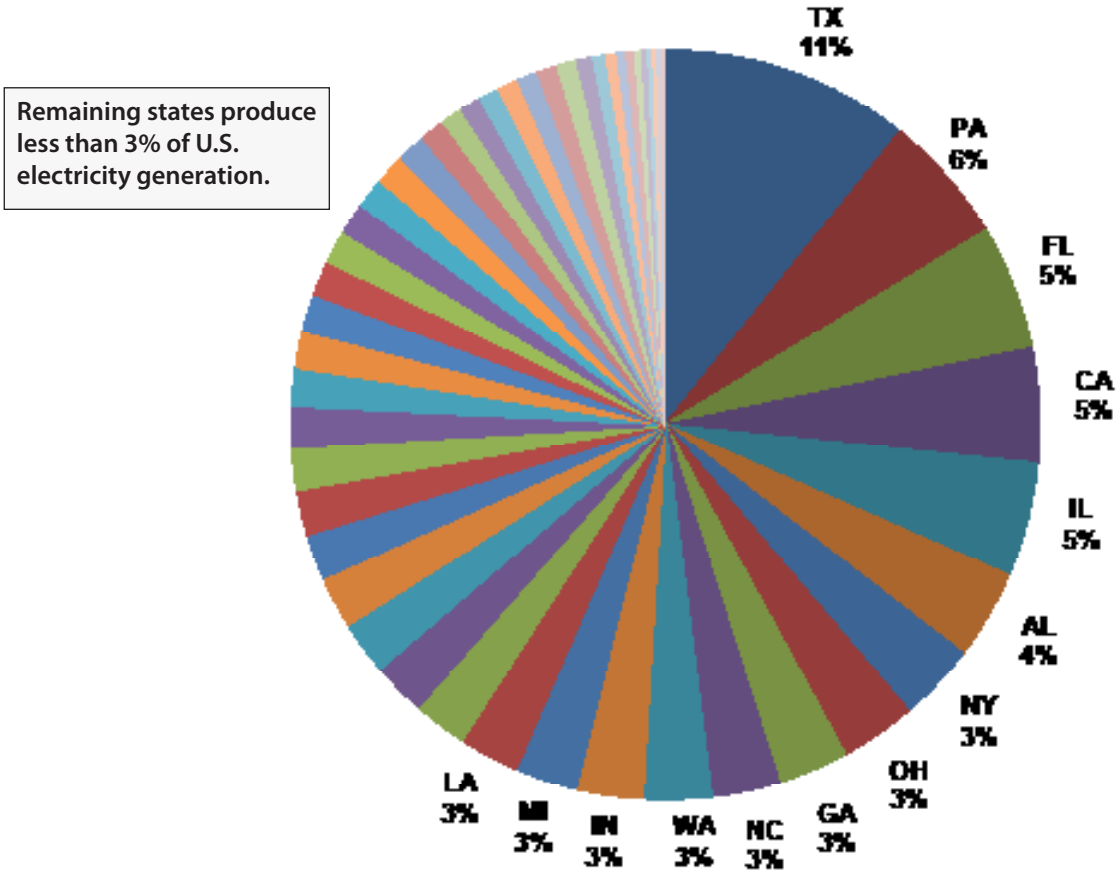
The disparate treatment of Texas under EPA's proposed rule is glaring. The CO_2 performance goal that EPA would assign to Texas is almost three times stricter than Florida's—the state with second highest burden. EPA's state-specific performance goals allow some states to avoid any CO_2 re-

Figure 3: EPA's Modeled Increase in Renewable Electricity from Top 10 Renewable States (2012-2030)



Source: EPA's IRP Modeled Increase in Renewable Electricity from Top 10 States (2012-2030).

Figure 4: Percentage of Total U.S. Production of Electricity



Source: EPA Data File—2012 Unit Level Data Using eGRID Methodology.

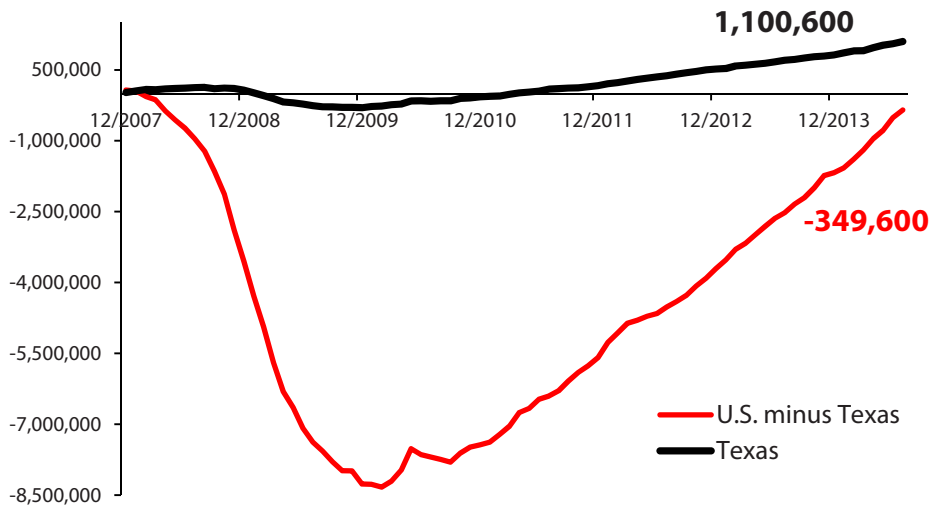
duction—or indeed to increase CO_2 emissions for reasons not fully explained in the rule. In 2013, West Virginia derived 95 percent of electricity from coal but EPA imposed no CO_2 reductions on this state under the new rule. In 2013, Indiana derived 84 percent of electricity from coal and is the third largest consumer of coal in the country but EPA stipulates a reduction of its CO_2 emission rate by only 2.55 percent.[30]

Uniqueness of the Texas Electric Sector

EPA apparently inflicts such a disparate burden on Texas because of the volume of electricity that Texas consumes. The Texas electric power market is indeed huge: 11 percent of the total U.S. generation. **See Figure 4**. This is as much as California and Florida combined, and would make Texas the 11th largest nation in the world if it were its own country. Texas, however, puts its electricity to highly productive use to benefit consumers across this country and the world as well as to increase employment in Texas. **See Figure 5.**

Unlike other states, industry and manufacturing consume approximately half of all electricity in Texas. **See Figure 6**. Texas produces more transportation fuels, chemical feed stocks, metals and diverse goods than any other state. Although many still think of the upper-Midwest as the industrial heart of the U.S., Texas is now the largest industrial state if upstream oil and natural gas production is included in the tally.[31] Why should Texas bear a regulatory burden for high consumption of electricity when consumers across the country enjoy the benefits of the transportation fuels,

Figure 5: Excluding Texas, Fewer Employed Across U.S. Since Recession Started



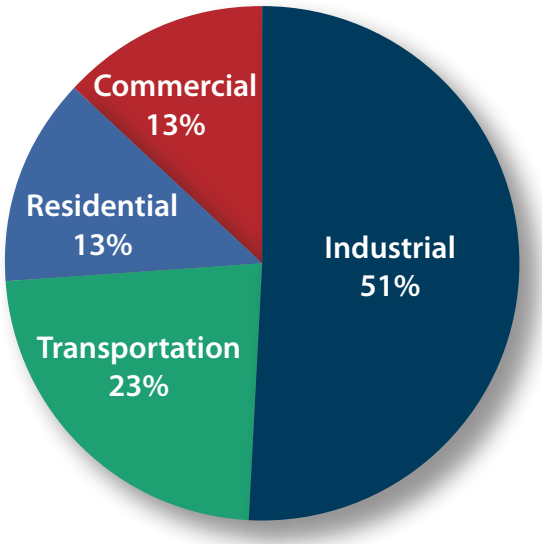
Note: Monthly non-farm employment data from Fed FRED from 12/2007-7/2014.

Source: Federal Bank of St. Louis, Federal Reserve Economic Data.

raw materials and consumer goods that are produced by energy intensive industries in Texas?

EPA repeatedly emphasizes that the "highly interconnected and integrated system of electric power generation" across the country will facilitate implementation. But the Agency EPA fails to recognize that the electric grid covering the majority of Texas is unlike the rest of the country. Operated by the Electric Reliability Council of Texas (ERCOT), the grid is wholly within the state's boundaries and is not connected to the national interconnected grids as are other multi-state grids. ERCOT is an Independent System Operator (ISO) providing electricity for 24 million people, representing 85 percent of the state's electric load and 75 percent of the land area. The remaining 25 percent of Texas is served by regionally interconnected grids.[32] EPA's analysis of Texas apparently assumes that the Texas grid is connected to regionally inter-connected grids adjacent to the intra-state grid operated by ERCOT.

Figure 6: Texas Energy Consumption by Sector, 2012

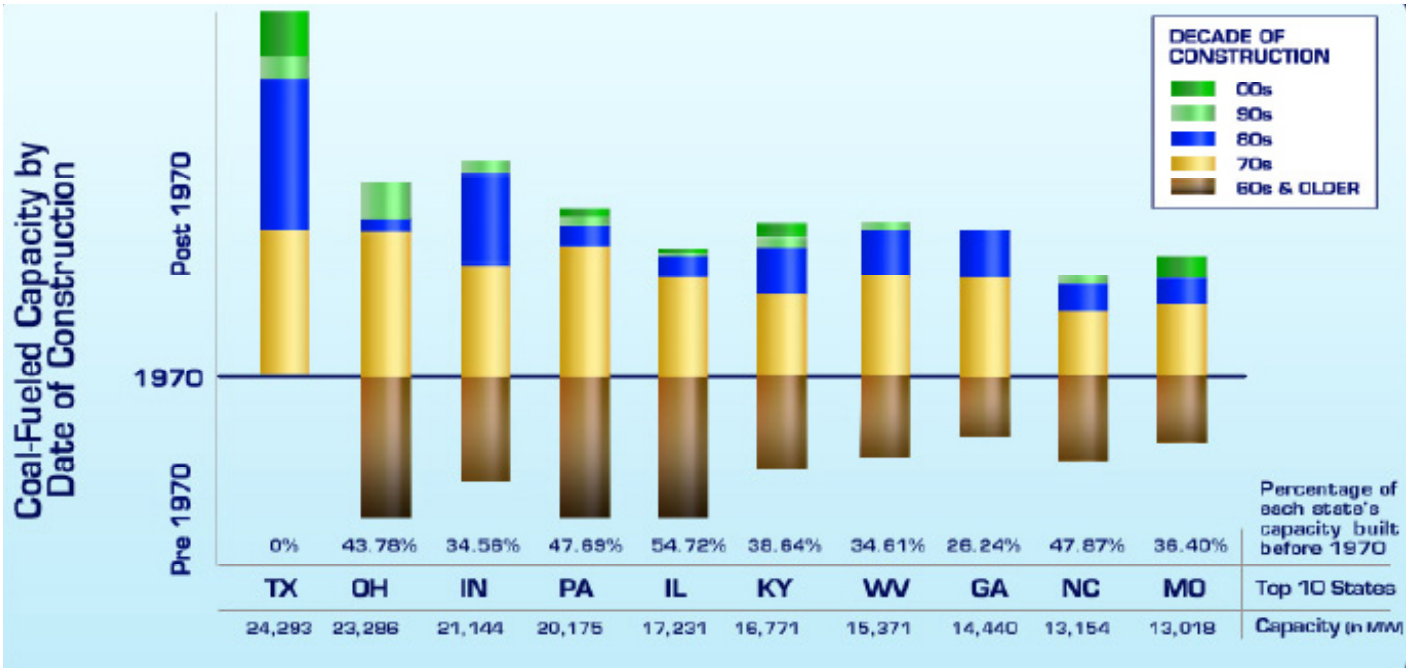


Source: EIA Texas State Energy Profile, 2013.

EPA's CPP would undermine the diverse generating mix Texas has enjoyed: coal, natural gas, nuclear, hydroelectric and wind. Under the de-regulated, "energy-only" market structure, this diversity makes the electric power sector of Texas competitive, resilient and helps keep consumer prices stable. EPA's performance standard would make natural gas the dominant fuel. Coal has been and remains a mainstay of electric generation in Texas because it is well suited for base load generation all year long and coal prices have remained low and more stable than other fuels.

A recent study on the economic value of diverse generating sources by IHS concludes that the current diversity of the U.S. generating fleet reduces cost by approximately $93 billion per year.[33] The study concluded that abrupt loss of

Figure 7: CPP—Loss of 50% of Youngest Coal Fleet

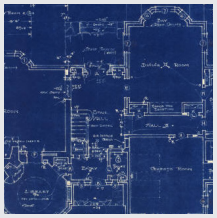


Source: Based on U.S. Energy Information Administration, Form EIA-860 Annual Generator Report, 2009.

diversity contemplated in EPA's CPP could mean a loss of $200 billion in Gross Domestic Product (GDP) and loss of $2100 in average income. And abrupt closure of coal plants could strand $730 billion in capital.

A fact that surprises many: Texas consumes twice as much coal as any other state but is not as dependent on coal as are many states.[34] Much of the electric infrastructure developed in Texas over the last century was developed around coal generation. A relatively abrupt loss of 50 percent of coal generation, as envisioned in the EPA rule, would be an enormous loss in capital investments and would require huge costs to reconfigure and expand the existing system for transmission.

Loss of the Texas coal fleet is also a loss of genuine environmental benefits. The fleet of coal plants in Texas is the youngest in the country and the most efficient and environmentally sound. **See Figure 7**. Average emissions of nitrogen oxides from coal plants in Texas are almost half the national average. **See Figure 8, next page.**

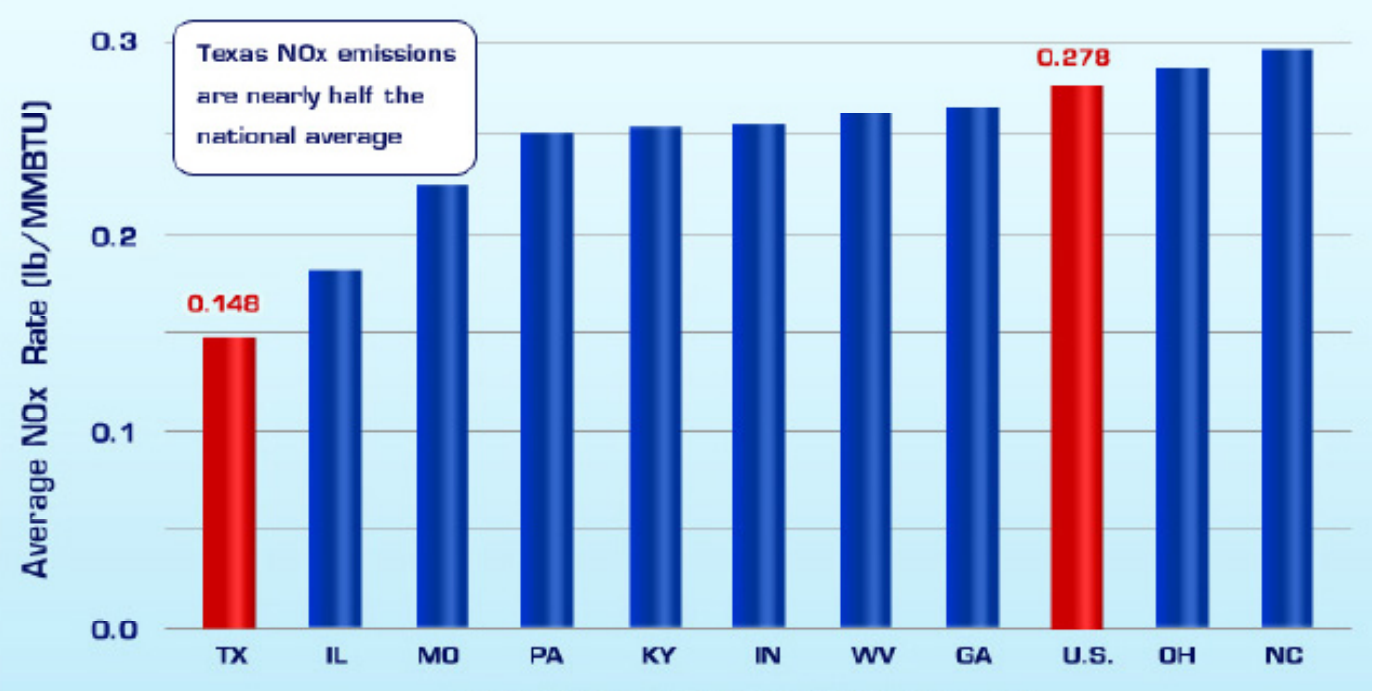


Advance Technologies for Genuine Pollutants

Advanced technologies achieve dramatic reduction of genuine pollutants at coal plants.

- Low-NOx Boilers
- Selective Catalytic Reduction (SCR): Reduces NOx and Mercury.
- Dry Electrostatic Precipitator (ESP): Reduces Particulates and Mercury.
- Sulfur Dioxide Scrubber: Reduces SO_2 and Mercury.
- Wet Electrostatic Precipitator (ESP): Reduces Fine Particulates.
- Sorbent Injection: Reduces Mercury.

Figure 8: Average NOx Emissions
Top 10 States by Total Coal-Fueled Capacity



Source: Balanced Energy for Texas (BET).

Emissions of genuine pollutants, such as sulfur dioxide, particulate matter, and mercury have been dramatically reduced through elaborate and costly retrofits of existing plants.

Over the last 20 years, coal generators in Texas have invested billions to install and retrofit plants with emission control technology required by EPA's rules for conventional pollutants. Coal-fired power plants' overall environmental performance continues to improve. Coal used for electric generation has increased in the United States by 173 percent since 1970.[35] Yet, key emissions per kilowatt hour from these plants have been reduced by almost 90 percent. Throughout the history of U.S. industry and electric power, newer plants have always meant reduced emissions and greater efficiency.

Rule Design

What EPA calls the Clean Power Plan is regulation under Section 111 of the CAA to require "Standards of Performance" for new or existing stationary industrial sources.[36] Section 111(b) applies to new sources and section 111(d) applies to existing sources. The performance standards for both new and existing sources are to be established, in the language of the law, on the basis of "the best system of emission reduction [BSER] … adequately demonstrated."

A standard of performance under Section 111 of the Act means a standard "which reflects the degree of emission limitation achievable through the application of the *best system of emission reduction … adequately demonstrated*." For new sources, EPA sets the standard on what is determined to be BSER. For existing sources, the states determine the performance standards. EPA's CPP, however, sets the standard for each state. Until these proposed CO_2 rules for new and existing power plants, EPA previously determined BSER through achievable emission controls or operational methods that achieved the most reduction of the pollutant in question.

Fundamental provisions of the CAA reflect an assumption of economic freedom within a competitive market. The Act limits EPA's authority to imposing the best pollution control technology as actually demonstrated to be commercially

achievable for the industrial process in question. Until now, it has been assumed that EPA cannot dictate the infeasible as a means of eliminating a certain fuel, process or product. If EPA has statutory authority to eliminate certain industries, then EPA acts as a master of a centrally controlled economy.

Yet, EPA has proposed a standard for new sources which has never been achieved at a single commercial operating plant. And for existing sources, EPA's CPP designs a standard not on the basis of systems of emission reduction for an individual plant but on the basis of replacing the source of emissions (coal-fired power plants) and its product (electricity) with a different source (natural gas or renewable) of the product.

This is a major departure from a core tenet of the CAA. In the law, Congress concluded that "air pollution control at its source," and no further, was the mode of federal regulation.[37]

For EPA to assume coercive regulatory power beyond the physical source of emission would violate the basic economic freedom still imbedded in the language of the CAA. As previously understood, EPA cannot determine preferred energy fuel, design, process and product. That is the prerogative of actors in the private economy. EPA can impose the best available emission control technology commercially demonstrated and thus achievable by individual industrial sources.

EPA contends its expansive definition of "system," now to encompass the entire system of electric power, is merely giving the general term "system" its ordinary meaning in a dictionary. Supreme Court precedent, however, holds that EPA cannot redefine a general term if it runs afoul of fundamental congressional intent.[38] The Supreme Court's recent decision in *Utility Air Regulatory Group v. EPA*, in part invalidating an earlier ghg rule, admonished EPA for "claims to discover in a long-extant statute unheralded power to regulate "a significant portion of the American economy."[39] Surely, EPA's re-design of the nation's system of electric generation reflects an expansive new power to regulate an industrial sector fundamental to the national economy. EPA's proposed rule for new power plants establishes a performance standard of 1100 lb. CO_2/MWh—a rate unachievable for even new coal plants with state of the art emission control technologies. The lowest carbon intensity these advanced new plants could likely achieve is a rate of 1800 lb. CO_2/MWh.

After proposing an infeasible standard for any new coal-fired power plant, EPA even more boldly proposes a rule to replace existing coal-fired generation. EPA has rarely required performance standards for existing sources for the obvious reason that existing facilities have far less leeway to alter the physical facility or process as compared to a newly designed and constructed unit. With this constraint in mind, Section 111(d) requires a standard that "takes into account the remaining useful life of the existing source to which such standard applies."[40]

EPA proposes this clean power rule under the rarely used and brief Section 111(d) of the CAA concerning performance standards for existing stationary sources of pollution. Of note in the different provisions for new versus existing facilities is that EPA sets the performance standard for new sources. But the state sets the performance standard for existing sources. For existing power plants, EPA is relegated to formulating federal guidelines for state implementation plans. If a state does not submit the SIP or EPA does not approve the SIP, EPA can prescribe and enforce a federal implementation plan.[41]

EPA's so-called guidelines in the CPP, however, impose a numeric performance standard for each state and predetermine what constitutes the "best system of emission reduction" (BSER) through four "building blocks" around which states must develop SIPS. For some states, of which Texas is the most egregious example, the performance standard is so stringent, that the state would have little choice but to implement what EPA already has established as BSER in all four building blocks.

EPA's claim to regulate "outside the fence" of the individual power plants is a turning point in the history of environmental regulation. The Agency claims jurisdiction "outside the fence" of the EGU's by a reinterpretation of BSER now construed to encompass what EPA considers the best system electric generation. And the "best system," according to EPA, is low to zero carbon emitting generation. Yet, there is not a single provision in the CAA that allows the EPA to regulate generation per se, electric markets, or the Integrat-

ed Resource Plans through which state utility commissions provide oversight of generation resources, electric markets and the actual dispatch of electric power on grids.

State governments—not the generator—are obligated to comply through state implementation plans which must guarantee enforceable measures. As issued under the CAA, the state performance goal must be clearly enforceable, quantifiable and verifiable. It is difficult to imagine how a state could verify compliance with this standard without some mandatory protocols for dispatch of electric generation.

Such low-carbon dispatch of electricity puts EPA's decree in a newly created federal control room for generation across the country. With the possible exceptions of Germany and California, no other country or state has imposed low carbon mandates with such coercive teeth as the CAA requires for regulatory standards. If the state implementation plans are not federally approved, the rule language of the CPP makes clear that EPA will assume direct control through a Federal Implementation Plan.

Just how could EPA exercise its enforcement powers when EPA is regulating "outside the fence"? EPA's general authority does include the use of police powers through federal marshals to shut down industrial sources. If states declined to implement a state plan, just how could EPA use federal marshals to enforce federal control of retail electric markets and operation of the electric grids—authority long held by the states?

Since 1935, the Federal Power Act has given states exclusive oversight authority over retail electricity markets. The law limits federal oversight to "only those matters which are not subject to regulation by the States."[42] EPA's proposed rule reverses the federal and state roles and would make EPA the overlord of centralized national energy policy.

Regulatory Structure

Based on EPA's re-invention of BSER to encompass low to zero carbon electric generation, EPA's master plan identifies four "building blocks" or "pathways" for design of the state implementation plans. Note that only the first block applies "inside the fence" around individual power plants—the long standing limit to EPA's jurisdiction. The flexibility that EPA repeatedly attributes to the rule apparently means that states can use various combinations of the four blocks as long as the plan demonstrates achievement of the numeric performance standard. The state's obligations to achieve the standards and to guarantee enforceability of the components of the state plan are not optional.

EPA articulates BSER—what constitutes the best system of reducing CO_2 emissions from power plants—under each building block.[43]

Building Block 1. Mandate a 6 percent improvement in heat rate for each existing coal-fired power plant.[44] Heat rate is a measure of the fuel efficiency of a power plant. It measures the amount of energy (in Btus) to generate 1 kilowatt-hour (kWh) of electricity. EPA's required 6 percent improvement in heat rate is likely unachievable for most coal plants. In Texas, many coal plants already have maximized heat rate efficiencies to be competitive and to comply with EPA's many new rules for conventional pollutants. According to industry sources, heat rate improvements of 1-3 percent may be achievable.

Building Block 2. Reduce coal fired generation by increasing the utilization of generation from combined cycle natural gas plants. EPA's model projects that by "re-dispatching" generation from coal to natural gas, natural gas plants can increase their average utilization to 70 percent and reduce coal fired generation accordingly.[45] Such a forced fuel switch from coal to natural gas for base load generation would necessitate closure of hundreds of EGU's across the country and perhaps as many as 25 plants in Texas, according to EPA's list of plants predicted to close.[46] EPA is far more optimistic than industry or most state agencies that natural gas plants designed to meet peak loads could actually provide base load generation throughout the year.

EPA leaves to the states the" choice" of which plants must close and what legal mechanism to force closure. In Texas, 16,500 MW of generating capacity out of a state total of 110,000 MW may prematurely retire within the next three years as a result cost or the infeasibility of EPA's mercury rule. EPA predicts that plant closures amounting to a loss of an additional 40-50 gigawatts are projected as a result of the CPP rule. Loss of more than 10-15 percent of the nation's total 1032 GW of

electric power over the same five years, indeed, raises questions about reliability and safety of the electric grid.[47]

Closure of this many plants, likely within five years, not only may compromise electric reliability but also leaves stranded billions of dollars already invested in these plants to install pollution control technologies for genuine pollutants. The state-of-the-art emission controls with which many coal plants are now equipped actually disadvantage those plants under the proposed rule. Operation of power plants with these technologies requires the consumption of considerable electric power. Thus, the additional volume of generation dedicated to environmental improvement penalizes the plant under EPA's low carbon regime.

Building Block 3. Require a massive deployment of renewable energy in many states. EPA assumes states can rapidly deploy new renewable energy generation to average 13 percent of state generating capacity across the country.[48] EPA's modeled "targets" for each state widely vary. The steepest renewable target is assigned to Texas. EPA apparently assumes that Texas can increase renewable capacity by over 150 percent—on top of the 12,000 MW of currently installed wind generating capacity. Integration of additional renewables on this scale increases risk to reliability and grid stability.

Building Block 4. EPA's final building block on energy efficiency differs from the previous three in that it focuses on demand for electricity rather than supply. EPA's BSER for energy efficiency would require states to achieve annual incremental savings in demand of 1.5 percent, measured as a percentage of retail sales avoided, through demand side management (DSM) measures.[49] Incremental savings are understood as the reduction in electricity use in a given year connected with new energy efficiency programs operating within the same year.

EPA's conclusion that a 1.5 percent incremental savings is reasonable standard is indeed computed on the basis of reductions achieved by the top 12 performing states and not on the average of all states.[50] Overall, the CPP concludes that states could achieve a cumulative "savings" of 10.7 percent by 2029.[51]

Enforceable Carbon IRPs and Dispatch Protocols

EPA's public communications stress the flexibility of the CPP rule. Many commentators, however, point out that the required "guaranteed enforceability" of state implementation plans would unavoidably compel a shift from "economic dispatch" of electric generation to "environmental dispatch." EPA's proposed power plan assumes that the Independent System Operators (ISOs) and Regional Transmission Operators (RTOs) which operate electric grids could be required to give dispatch priority to the lowest carbon emitting generation—a sea change in why and how electricity flows through the electric grid.

At a recent hearing in the House Energy and Commerce Committee, FERC Commissioner Phillip Moeller pointed out the magnitude of this change contemplated in EPA's Clean Power Plan:

> "For decades we have relied on the concept of "economic dispatch" of electric generation. Simply put, the power plants with the lowest operating cost are called first to generate electricity. … By moving to "environmental dispatch," units will be called to generate primarily based upon the [carbon] emission profile of the unit."[52]

Low to zero carbon dispatch protocols would give first priority to renewable and nuclear generation because these energy sources are considered zero-carbon in EPA's view. If those sources could not meet load, then natural gas units would be dispatched. And coal units would be dispatched only if renewables, nuclear and natural gas could not meet the load. Giving low carbon generation priority over low-cost generation is what gave Germans retail electric prices three times that of the average U.S. price and major problems with the stability of the grid.[53] The amount of back-up generation from coal and natural gas necessary to support dispatch of large volumes of intermittent generation would increase retail prices and waste generating fuels.

State Implementation of EPA's Power Plan

As analyst William Yeatman has observed: "If finalized, the rule would constitute an unprecedented usurpation of power by the EPA from the states and fundamentally overhaul the electric industry."[54]

Without new law, the CPP's required state implementation plans would involve violation of existing state law to comply with EPA's questionably lawful mandate.[55] With the possible exception of California, most state law would prohibit implementation of EPA's Clean Power Plan. A threshold question is whether a state environmental regulatory agency or a public utility commission would be the state entity primarily responsible for compliance with the federal mandates. Compliance with the CPP would require new state legislation to integrate the traditional authority and function of environmental regulatory agencies, utility commissions, and those entities that operate the electric grids.

The Texas Commission on Environmental Quality (TCEQ) is the agency directly obligated by EPA rules under the CAA. TCEQ, however, has the authority only to implement the first of the four components of the CPP's building blocks regarding heat rate at individual plants. TCEQ is bereft of any authority to close coal plants otherwise in full compliance with other federal and state rules or to triple the state's Renewable Portfolio Standard. Without changes to current state law, the Texas Public Utility Commission (PUCT) could not re-regulate this state's electricity market through Carbon IRPs or low carbon dispatch protocols. Although the TCEQ has been the state agency previously responsible for compliance with state implementation plans required by the CAA, it is the PUCT whose function is most directly implicated by EPA's Clean Power Plan.

Texas law, like that of a majority of states, does include a Renewable Portfolio Standard (RPS). The proposed CPP, however, requires that states implement what is the equivalent of a federal RPS dictated by EPA's terms. The U.S. Congress, on several occasions, has considered but rejected establishing such a federally imposed RPS.

Changing state law to accommodate EPA's Clean Power Plan would mean loss of the authority over the state's system of electric generation and dissolution of the Texas competitive electric market. This is a 180 degree departure from the federal-state framework for the electric power sector first enacted in the Federal Power Act of 2035. The CPP would give EPA the final say in how states generate, transmit and

The Social Cost of Carbon (SCC)

EPA now calculates climate "damage" on the basis of a newly invented metric called the Social Cost of Carbon (SCC). As analyst Marlo Lewis explains, "The SCC is a guestimate of the present value of the cumulative damage to society out to the year 2300 from an incremental ton of CO_2 emitted in a particular year." The methodology relies on manipulating variables in the climate models regarding future extreme weather events, sea levels, ice sheets that are imaginative but data free.[56]

Thus, none of the climate benefits that EPA attributes to avoided CO_2 emissions could be apparent in 2030 and likely not for a century or more! There is now way that avoided damages calculated from 2010 to 2300 can generate billions of dollars of benefit for living Americans in 2030. Yet, EPA Administrator Gina McCarthy, when publicly announcing the rule, claims this Clean Power Plan will yield health and climate benefits up to $90 billion dollars.

Although EPA's new rule would mean loss of billions in capital already invested in cutting-edge environmental controls, the benefits from the CPP are so minute as to be practically immeasurable. Let that sink in. In this rule, EPA has arrogated federal authority far beyond the CAA to reconfigure the entire country's system of electric generation to achieve 0.01 degrees Celsius cooling—if the predicted warming which has ceased for almost 20 years resumes—according to the IPCC models.

Costs and Benefits of EPA's Clean Power Plan

EPA's Cost and Benefit Analyses, found in the Regulatory Impact Analysis (RIA) of proposed regulations, invariably claim monetized benefits far in excess of costs. EPA's "By the Numbers Fact Sheet" for the Clean Power Plan projects benefits for human health and climate at $55 to $93 billion and costs from $7.3 to $8.8 billion. And what a great deal would that be if it were true. EPA, however, has so distorted the analysis of benefits and costs—potentially a vital component of rulemaking—that the numbers are meaningless.[57]

Unlike previous rules for greenhouse gases, the Clean Power Plan omits an estimate of benefits for the fundamental problem driving EPA's CO_2 rule for the power sector: anthropogenic global warming. EPA previously calculated such "climate benefits" in earlier ghg rules although they revealed the futility of the regulatory endeavor. Consider these numbers on EPA's CO_2 rule for the power sector.

If the 30 percent of CO_2 to be reduced by this new rule is plugged into the official climate science model, global mean temperature would be reduced by only 0.018 degrees Celsius—a meaningless amount.

Although the CPP would cause fundamental disruption of the nation's finely tuned system of electric generation and transmission, higher costs, job loss and billions in stranded assets, the rule would have no discernible effect on warming predicted by the official science endorsed by the EPA. Power sector CO_2 emissions in the U.S. account for only 0.18 percent of global CO_2 emissions.

Contrary to EPA's characterization of CO_2 as a dirty pollutant leading to early death, heart attacks and asthma, ambient levels of CO_2 have no adverse impacts on human health. In fact, CO_2 is often called "the gas of life" because it is the natural, odorless, invisible atmospheric gas on which all plants depend for photosynthesis. Increased CO_2 increases plant growth.[58]

CO_2 has no ambient health effects even at levels 10 times higher than current levels of slightly less than 400 parts per million. For good reason, EPA has never determined a health effects level for CO_2. OSHA does establish a CO_2 level at which adverse health effects begin but at a level of *5000 ppm within an enclosed space*.

The health benefits EPA claims are all indirectly derived. EPA contends reduced coal generation will reduce genuine pollutants, especially fine particulate matter (PM) and ozone. Such "co-benefits," as EPA calls them, account for more than 90 percent of the of the CPP's claimed health benefits. Multiple facts unravel the credibility of EPA's claims.[59]

EPA is now using the same co-benefits from reduced particulate matter to justify multiple rules—quadruple counting of the same data. The CAA requires that EPA establish a National Ambient Air Quality Standard for particulate matter at a level protective of human health with a margin of safety and regardless of cost—an extremely protective standard. Most areas in the country are well below this protective standard. EPA is now claiming health benefits from reduced emissions at levels far below the federal standards and even natural background levels.

This absurd method of identifying health risks to justify regulation is known as "no safe threshold" risk analysis. By means of data-free extrapolation, EPA assigns health risks below natural background levels to zero. In other words, no risk is too low to warrant EPA regulation. EPA's risk assessment also contradicts toxicological studies which find that current levels of particulates already are too low to cause disease or death.

consume electricity. Such carbon IRPs and related dispatch protocols for operation of the electric grid would be enforceable by EPA. Such a regulatory regime would fracture the fundamental parameters of ERCOT's management of the electric grid in Texas—forcing a shift from least cost, reliable dispatch to "environmental dispatch" based on carbon content of the generating fuel.

Conclusion

EPA's CPP is doubly ultra vires: beyond the powers granted in federal and state law. That the federal courts could possibly uphold EPA's power plan rule under the terms of the CAA is difficult to imagine. The proposed rule's performance standards and control measures reflect no consideration of cost, demonstrated achievability or electric reliability. Theoretical feasibility on paper becomes the operative principle to establish the mandatory performance standard.

Under the CAA, EPA is authorized to regulate pollutants "inside the fence" of the power plant. Yet, the core measures in EPA's proposed CPP require wide-ranging actions "outside the fence" extending—state by state—to the entire national system of electric generation. Once EPA asserts authority beyond the source "inside the fence," EPA's power to compel lacks a limiting principle under the law.

EPA has acknowledged that the next CO_2 regulations will be performance standards for existing refineries and other industrial categories. If EPA's CPP scheme is a precursor of low-carbon performance standards for existing industrial sources, imagine what a CO_2 standard for oil refineries might look like. Building Block 1 could be an infeasible standard for efficiency of the plant's operation. Building Block 2 could require displacing oil refining with compressing natural gas for transportation fuel. Building Block 3 could require 85 percent ethanol for liquid fuel blends. Building Block 4 could require demand side reductions in the form of maximum limits for vehicles miles traveled.

The predicted mess has arrived and it is an inglorious mess.[60] The Clean Air Act is not an appropriate vehicle for regulation of CO_2 unless maximizing federal control of the economy is the goal. Longtime chairman of the U.S. Energy and Commerce Committee—and an author of the original CAA, John Dingell, predicted what a "glorious mess" would arise from EPA's effort to regulate CO_2 under the CAA. Congressman Dingell well understands that the statutory architecture of this law was never intended for controlling CO_2—a natural, harmless and ubiquitous gas wholly unlike the conventional pollutants for which the CAA was designed.

Congress considered but ultimately rejected alternative ways to limit CO_2, including EPA regulation under the CAA, a carbon tax, a federal Renewable Portfolio Standard, or a trading scheme typically called cap and trade. Many recent descriptions of the clean power rule as an EPA-enacted cap and trade scheme miss the distinctive marks of the CAA. The regulatory mechanisms available in the CAA are more onerous, prescriptive and enforceable in the Soviet top down style than trading or taxing schemes.[61] As early as 1988, a founding trustee of the Environmental Defense Fund noted, "The EPA's regulation has grown to the point where it amounts to nothing less than a massive effort of Soviet-style planning of the economy to achieve environmental benefits."[62]

The breadth and depth of EPA's foray "outside the fence" to mandate dispatch of electricity based on carbon content rather than cost and safety indeed amounts to reckless federal engineering at the nerve center of electric power. Yet, the CAA is devoid of a single provision that deputizes EPA as federal architect and enforcer of centralized energy planning.

The regulatory overreach of EPA's Clean Power Plan calls to the mind the words of Supreme Court Justice Scalia in his majority opinion on an earlier, more light-handed ghg regulation known as "Tailoring Rule." In ruling against EPA's blatant re-write of the black letter terms of the CAA, the Court took exceptional note of the "enormous and transformative expansion in EPA's regulatory authority without congressional authorization." Justice Scalia noted:

> When an agency claims to discover in a long-extant statute an unheralded power to regulate a significant portion of the American economy, we typically greet its announcement with a measure of skepticism. We expect Congress to speak clearly if it wishes to assign to an agency decisions of vast economic and political significance.[63]

Federally stipulated and enforced control of generation, dispatch, transmission and consumption of electricity is, as Justice Scalia put it, "an agency decision of vast economic and political significance." Electric power may be characterized as a single industrial sector within the Standard Industrial Code but the price and reliability of electricity affect every enterprise and individual life.

Justice Scalia's rhetorical rebuke of EPA's overreach is notably strong. The Supreme Court' s decision on the "Tailoring Rule," however, did not vacate the rule in entirety nor undermine EPA's claimed authority to regulate ghg—an authority that Congress declined to delegate but EPA nonetheless arrogated through the Endangerment Finding of 2009.

This vast expansion of EPA's powers never contemplated by Congress may seem a likely candidate for the High Court's undoing. Judicial restraint of EPA, however, has been rare and when restraint has occurred, it has been mild. Until the CAA is meaningfully amended, EPA's increasingly imperious rule over the economy is—more likely than not—to survive judicial review. The Court maintains that because Congress, in the CAA, delegated such broad decision-making authority to the EPA experts, the judiciary must defer to the legislative branch of our tri-parte constitutional structure.[64] Clarity must come from new federal law that articulates more specific limits to what the courts now view as EPA's discretionary regulatory authority.

EPA's Clean Power Plan poses grave questions for state governments. Compliance with the EPA's requirements would cede fundamental state authority over electric utilities to the federal government. A state's effort to comply with EPA's plan would involve violating state law to comply with EPA's rule violating federal law. State law to create new "institutional arrangements" among environmental agencies and public utility commissions reeks of federal commandeering of state powers. The timelines for rule adoption and state plan submissions are too tight to allow full judicial review before the effective date of the rule. Upon adoption, petition for emergency stay of the rule may be the wisest step forward.

In this single power plan rule, EPA has arrogated federal authority far beyond the CAA to reconfigure the entire country's system of electric generation. Yet the intended 30 percent CO_2 reductions would have no effect on alleged global warming. If this 30 percent reduction is plugged into the official IPCC models, the benefit amounts to 0.018 degrees Celsius cooler temperatures. Predictions of warming are increasingly contradicted by physical evidence. Warming has ceased for more than 17 years.

So how does EPA justify regulation that would dismember the nation's miraculous system of electric generation finely-tuned over the last century? EPA has offered multiple implausible justifications—but most frequently claims the rule will be an important "symbol" in upcoming climate talks to forge a binding international agreement. So this radical disruption of the nation's system of electric power is justified because it will help seal international accords in which the U.S. cedes national sovereignty to a global overlord of energy?

Congress alone can end this inglorious mess and redress EPA's ever-expanding scope of jurisdiction. The time is nigh for Congress to establish clear limits for EPA's authority so that federal courts can meaningfully restrain an agency which now knows no bounds. ✯

Appendix I

EPA's Projected Power Plant Closures in TX by 2020

Plant (# of Units)	Proj. Year of Retire.	Coal	CT	O/G	Total
AES Deepwater (1)	**			138	138
Big Brown (2)	2016	1195			1195
Coleto Creek (1)	2018-2020	592			592
Fayette (3)	2018-2020	1639			1639
Gibbons Creek (1)	2018-2020	466			466
Harrington (3)	2016 (1); 2018-2020 (2)	1018			1018
J T Deely (2)	2016 Base	870			870
Lake Creek (2)	**		4		4
Lewis Creek (2)	**			460	460
Monticello (2)	2016	1130			1130
Nichols (3)	**			457	457
Oklaunion (1)	2020-2025	669			669
W A Parish (4)	2016-2018 (2); 2018-2020 (2)	2509			2509
Pirkey (1)	2018-2020	723			723
Plant X (3)	**			200	200
Sabine (5)	**			1814	1814
San Miguel (1)	2016	391			391
Thomas Ferguson (1)	**			420	420
TNP 1 (1)	**	286			286
Welsh (3)	2016 Base (1); 2016 (2)	1584			1584
TOTAL		13,072	4	3,489	16,565

Source: EPA IPM, Base Case Unit Retirements, 2020.

Endnotes

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[11] U.S. EPA, Data File: Goal Computation - Appendix 1.
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[39] 134 S. Ct. 2427 (2014).
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[49] Ibid. at 34873.
[50] Ibid. at 34872.
[51] Ibid. at 34874.
[52] Commissioner Philip Moeller, Federal Energy Regulatory Commission, Testimony before the House Energy and Commerce Committee Subcommittee on Energy and Power (29 July 2014).
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Kathleen Hartnett White joined the Texas Public Policy Foundation in January 2008. She is a Distinguished Senior Fellow-in-Residence and Director of the Armstrong Center for Energy & the Environment.

Prior to joining the Foundation, White served a six-year term as Chairman and Commissioner of the Texas Commission on Environmental Quality (TCEQ). With regulatory jurisdiction over air quality, water quality, water rights & utilities, storage and disposal of waste, TCEQ's staff of 3,000, annual budget of over $600 million, and 16 regional offices make it the second largest environmental regulatory agency in the world after the U.S. Environmental Protection Agency.

Prior to Governor Rick Perry's appointment of White to the TCEQ in 2001, she served as then Governor George Bush appointee to the Texas Water Development Board where she sat until appointed to TCEQ. She also served on the Texas Economic Development Commission and the Environmental Flows Study Commission. She recently completed her term as an officer and director of the Lower Colorado River Authority. White now sits on the editorial board of the *Journal of Regulatory Science*, the Texas Emission Reduction Advisory Board, and the Texas Water Foundation. Her writing has appeared in numerous publications including *National Review, Investors' Business Daily, Washington Examiner, Forbes, Daily Caller, The Hill*, and major Texas newspapers. She most recently testified before the U.S. Senate Environment and Public Works Committee.

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